

# Robustel GoRugged M1000 Pro V2

Dual SIM Industrial Serial to Cellular Gateway

For GSM/GPRS/EDGE/UMTS Networks

## User Guide

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## **About This Document**

This document describes the hardware and software of the *Robustel M1000 Pro V2 Dual SIM Industrial Serial to Cellular Gateway*.

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## **Technical Support Contact Information**

Tel: +86-2023354618

Fax: +86-2032016426

E-mail: [support@robustel.com](mailto:support@robustel.com)

Web: [www.robustel.com](http://www.robustel.com)

**Important Notice**

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the gateway are used in a normal manner with a well-constructed network, the gateway should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Robustel accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the gateway, or for failure of the gateway to transmit or receive such data.

**Safety Precautions****General**

- The gateway generates radio frequency (RF) power. When using the gateway care must be taken on safety issues related to RF interference as well as regulations of RF equipment.
- Do not use your gateway in aircraft, hospitals, petrol stations or in places where using GSM products is prohibited.
- Be sure that the gateway will not be interfering with nearby equipment. For example: pacemakers or medical equipment. The antenna of the gateway should be away from computers, office equipment, home appliance, etc.
- An external antenna must be connected to the gateway for proper operation. Only uses approved antenna with the gateway. Please contact authorized distributor on finding an approved antenna.
- Always keep the antenna with minimum safety distance of 26.6 cm or more from human body. Do not put the antenna inside metallic box, containers, etc.

**Note:** *Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Gateway may be used at this time.*

**Using the gateway in vehicle**

- Check for any regulation or law authorizing the use of GSM in vehicle in your country before installing the gateway.
- The driver or operator of any vehicle should not operate the gateway while in control of a vehicle.
- Install the gateway by qualified personnel. Consult your vehicle distributor for any possible interference of electronic parts by the gateway.
- The gateway should be connected to the vehicle's supply system by using a fuse-protected terminal in the vehicle's fuse box.
- Be careful when the gateway is powered by the vehicle's main battery. The battery may be drained after extended period.



**Protecting your gateway**

- To ensure error-free usage, please install and operate your gateway with care. Do remember the follow:
- Do not expose the gateway to extreme conditions such as high humidity / rain, high temperatures, direct sunlight, caustic / harsh chemicals, dust, or water.
- Do not try to disassemble or modify the gateway. There is no user serviceable part inside and the warranty would be void.


- Do not drop, hit or shake the gateway. Do not use the gateway under extreme vibrating conditions.
- Do not pull the antenna or power supply cable. Attach/detach by holding the connector.
- Connect the gateway only according to the instruction manual. Failure to do it will void the warranty.
- In case of problem, please contact authorized distributor.

## Regulatory and Type Approval Information

**Table 1:** Directives

2002/95/EC	Directive of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)	
2002/96/EC	Directive of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE)	
2003/108/EC	Directive of the European Parliament and of the Council of 8 December 2003 amending directive 2002/96/ec on waste electrical and electronic equipment (WEEE)	

**Table 2:** Standards of the Ministry of Information Industry of the People's Republic of China

SJ/T 11363-2006	"Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products" (2006-06).	
SJ/T 11364-2006	<p>"Marking for Control of Pollution Caused by Electronic Information Products" (2006-06).</p> <p>According to the "Chinese Administration on the Control of Pollution caused by Electronic Information Products" (ACPEIP) the EPUP, i.e., Environmental Protection Use Period, of this product is 20 years as per the symbol shown here, unless otherwise marked. The EPUP is valid only as long as the product is operated within the operating limits described in the Hardware Interface Description.</p> <p>Please see <a href="#">Table 3</a> for an overview of toxic or hazardous substances or elements that might be contained in product parts in concentrations above the limits defined by SJ/T 11363-2006.</p>	

**Table 3:** Toxic or hazardous substances or elements with defined concentration limits

Name of the part	Hazardous substances					
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
Metal Parts	o	o	o	o	o	o
Circuit Modules	x	o	o	o	o	o
Cables and Cable Assemblies	o	o	o	o	o	o
Plastic and Polymeric parts	o	o	o	o	o	o
<p><b>O:</b></p> <p>Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.</p> <p><b>X:</b></p> <p>Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials for this part <i>might exceed</i> the limit requirement in SJ/T11363-2006.</p>						

## Revision History

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

Release Date	Firmware Version	Details
2012-11-23	1.00	First Release

## Contents

Chapter 1.	Product Concept .....	8
1.1	Overview .....	8
1.2	Packing List .....	8
1.3	Key Features .....	10
1.4	Specifications .....	11
1.5	Dimensions .....	12
1.6	Selection and Ordering Data .....	12
Chapter 2.	Installation .....	13
2.1	Overview .....	13
2.2	LED Indicators .....	13
2.3	Mounting the Gateway .....	14
2.4	Installation the SIM Card .....	15
2.5	Connect the External Antenna (SMA Type) .....	16
2.6	Connect the Gateway to External Device .....	16
2.7	Grounding the Gateway .....	17
2.8	Power Supply .....	17
Chapter 3.	Operate the Gateway .....	18
3.1	Working Mode Overview .....	18
3.2	DTU Configurator Overview .....	18
3.2.1	Management via RS-232 port .....	19
3.2.2	Management via TCP connection .....	21
3.2.3	Operation Area Introduction .....	22
3.2.4	Export and Import Profiles .....	23
3.2.5	COM .....	24
3.2.6	Basic .....	25
3.2.7	GPRS .....	26
3.2.8	Dual SIM .....	28
3.2.9	Connection .....	29
3.2.10	DDNS .....	31
3.2.11	Phone Book .....	32
3.2.12	Wakeup .....	32
3.2.13	Reboot .....	34
3.2.14	Modbus .....	35
3.2.15	Advanced .....	37
3.2.16	NMS .....	39
3.2.17	Management .....	39
Chapter 4.	Typical Applications .....	41
4.1	Overview .....	41
4.2	Typical Applications .....	42
4.2.1	TCP Client Mode .....	42
4.2.2	TCP Server Mode .....	44
4.2.3	UDP Mode .....	45

4.2.4	Virtual COM Mode .....	46
Chapter 5.	Appendix .....	47
5.1	Factory Settings.....	47
5.2	Troubleshooting .....	47
5.2.1	The modem's LED does not light: .....	47
5.2.2	No connection with modem through serial link.....	47
5.2.3	GPRS/UMTS connection cannot be established .....	47
5.3	Terms and Abbreviations.....	48



# Chapter 1. Product Concept

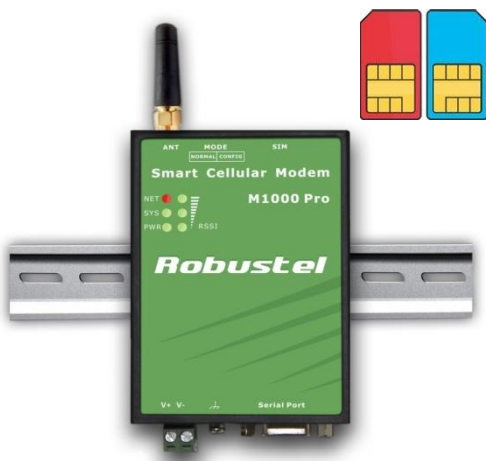
## 1.1 Overview

- Robustel GoRugged M1000 Pro V2 is a rugged serial to cellular gateway with dual SIM offering state-of-the-art 2G connectivity for machine to machine (M2M) applications.
- Dual SIM redundancy for continuous cellular connections.
- Automatic GPRS/UMTS connection (no AT commands required) and watchdog for reliable communications.
- Transparent TCP and UDP socket connections.
- Support Virtual COM (COM port redirector).
- Supports ICMP, DDNS.
- Built-in software selectable RS232 / RS485 interfaces, with 15 KV ESD serial line protections. Six LED indicators provide signal strength (RSSI) and status.
- The gateway supports a wide range of input voltages from 9 to 36 VDC and a wide range of temperature from -25 to 70°C.
- The metal enclosure can be mounted on a DIN-rail or on the wall, also with extra ground screw.

## 1.2 Packing List

Check your package to make certain it contains the following items:

- Robustel GoRugged M1000 Pro V2 gatewayx1



- 2-pin pluggable terminal block for power connector x1



- CD with user guide and configuration utility x1

**Note:** Please notify your sales representative if any of the above items are missing or damaged.

Optional accessories (can be purchased separately):

- SMA antenna (Stubby antenna or Magnet antenna optional) x1

**Stubby antenna**



**Magnet antenna**



- Serial cable for RS232 (DB9 Female to DB9 Male, 1 meter) x1



- Wall Mounting Kit



- 35mm Din-Rail mounting kit



- AC/DC Power Supply Adapter (12VDC, 1A) x1



## 1.3 Key Features

- Dual SIM redundancy for continuous cellular connections.
- Auto GPRS/UMTS connect/reconnect (no AT commands required), watchdog for reliable communications.
- Transparent TCP and UDP socket connections.
- Supports Virtual COM (COM port redirector).
- Supports ICMP, DDNS.
- Supports Modbus/RTU to Modbus/TCP.
- Auto reboot via SMS/Caller ID or during a preset time of a day.
- Various dial-up policies, such as always online, auto disconnect GPRS when idle, wakeup by serial data, SMS, Caller ID, during a preset time of a day or periodically at preset interval.
- Auto SMS of IP for dynamic IP SIM Card.
- Packetization methods: packet length / time interval / special end characters.
- Remote control via SMS.
- Local firmware upgrade via serial interface.
- Remote firmware upgrade via TCP.
- RS232/RS485 selectable by software.
- Six LED indicators provide signal strength (RSSI) and status.
- Wide range input voltages from 9 to 36 VDC and wide range operating temperature: -25 to 70 °C.
- The metal enclosure can be mounted on a DIN-rail or on the wall, also with extra ground screw.

## 1.4 Specifications

### Cellular Interface

- Standards: GSM/GPRS/EDGE
- GPRS: max. 86 kbps (DL & UL), class 10
- EDGE: max. 236.8 kbps (DL & UL), class 12
- UMTS: max. 384 kbps (DL/UL)
- Frequency: 850/900/1800/1900 MHz for GPRS/EDGE  
900/2100 MHz for UMTS
- CSD: Up to 14.4 kbps
- Output Power: 1 watt GSM1800/1900
- 2 watts EGSM 900/GSM 850
- SIM: 2 x (3V & 1.8V)
- Antenna Interface: SMA Female, 50 ohms impedance

### Serial Interface

- Number of Ports: 1 x DB9 Female
- Serial Standards: RS232 and RS485 selectable by software
- ESD Protection: 15KV
- Parameters: 8N1, 1200bps to 115200bps
- Flow Control: RTS/CTS, XON/XOFF
- RS-232: TxD, RxD, RTS, CTS, GND
- RS-485: Data+ (A), Data- (B), GND

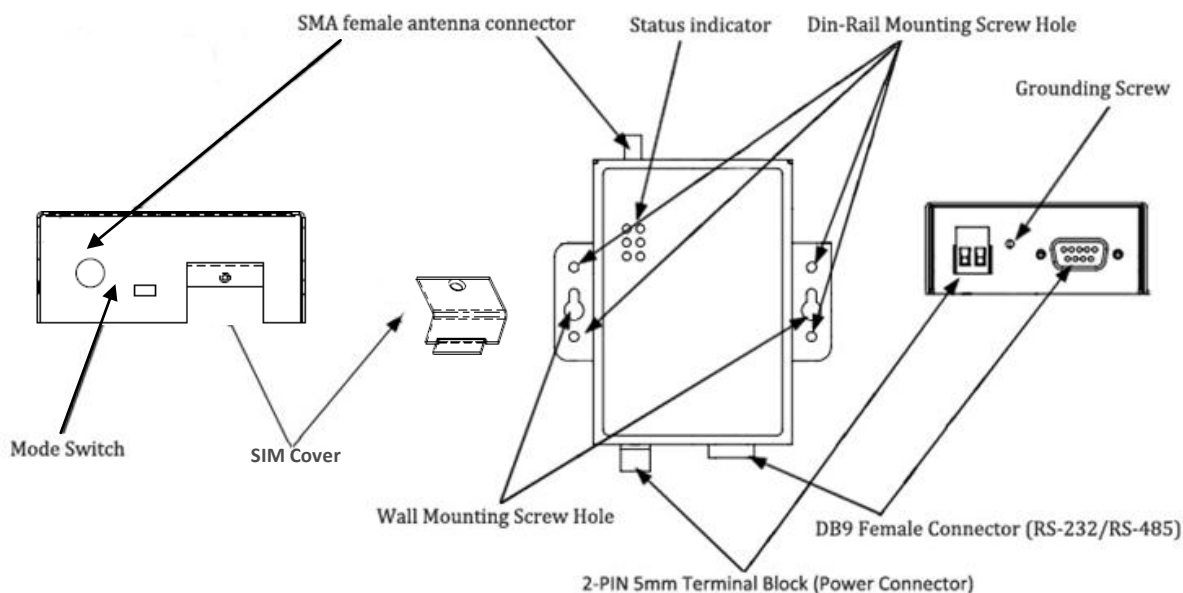
### System

- LED Indicators: 6 indicators, PWR, RUN, NET and 3 level RSSI
- Real Time Clock: Built-in real time clock with button battery
- Watchdog and Timer: Built-in watchdog and timer



## Chapter 2. Installation

### 2.1 Overview



### 2.2 LED Indicators

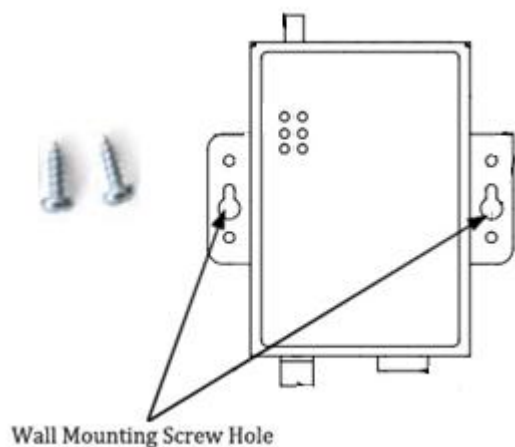


Name	Color	Function
RSSI (3 LEDs)	Green	Cellular signal strength level
NET	Red	Indicating the GPRS/UMTS connection status. GPRS/ UMTS connection established: blinking every 3s GPRS/ UMTS connection alarm: always on Wireless module rebooting and searching GPRS/UMTS network: blinking every 1s
SYS	Green	Indicating the system status. System is booting: blinking every 0.5s System is running normally but without any GPRS/UMTS connection: blinking every 1s System is running normally and GPRS/UMTS connection established: blinking every 3s System is running abnormally: 2.5s on and 0.5s out during every 3s
PWR	Green	On when DC power connected

RSSI LEDs	Function
None	No signal or SIM card not installed properly
1 bar (Only the first LED is on)	Weak or insufficient signal (SMS only)
2 bars (The first and the second LED are on)	Average signal (GSM/GPRS/UMTS connections)
3 bars (All the RSSI LEDs are on)	Exceptional signal (GSM/GPRS/UMTS connections)
The first and the second LED are blinking every 1 second	PIN code error
The third LED is blinking every 1 second	PIN code error and need to use PUK code to unlock it
The second LED is blinking every 1 second	No SIM card or SIM card not installed properly
The third LED is blinking every 1 seconds	Cannot communicate with wireless module.
The first and the third LED are blinking every 1 second	Cannot register to network or SIM card is unavailable

## 2.3 Mounting the Gateway

Use 2 pcs of M3 screw to mount the gateway on the wall.



Or to mount the gateway on a DIN rail, you need three pcs of M3 screws.



## 2.4 Installation the SIM Card

Be sure to insert a SIM card before you use the gateway.

**Note:** A SIM card set with PIN code cannot be used normally in the gateway. You need to use DTU Configurator to unlock the PIN code of the SIM card first.

Make sure to disconnect the charger and switch off your gateway before inserting or removing your SIM/USIM card.



### ■ Inserting SIM Card

1. Make sure your charger is disconnected.
2. Use a screwdriver to unscrew the screw on the cover, and then remove the cover, you could find the SIM Card slot.
3. Insert the SIM card, and you need press the SIM card with your fingers until you hear “a cracking sound”. Then use a screwdriver to screw the cover.

### ■ Removing SIM card

1. Make sure your charger is disconnected, and then press and hold down the power key until the gateway is powered off.
2. Press the SIM card until you hear “a cracking sound”, when the SIM card will pop up to be pulled out.

### Note:

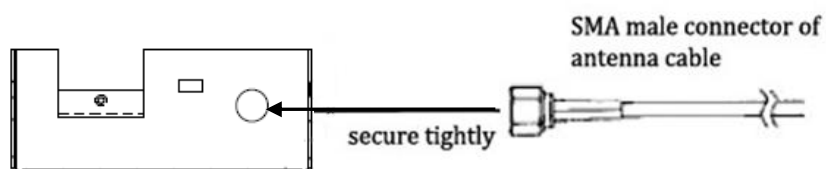
1. Don't forget screw the cover for again-theft.
2. Don't touch the metal surface of the SIM card in case information in the card is lost or destroyed.
3. Don't bend or scratch your SIM card. Keep the card away from electricity and magnetism.
4. Make sure to disconnect the power source from your gateway before inserting and removing your SIM card.





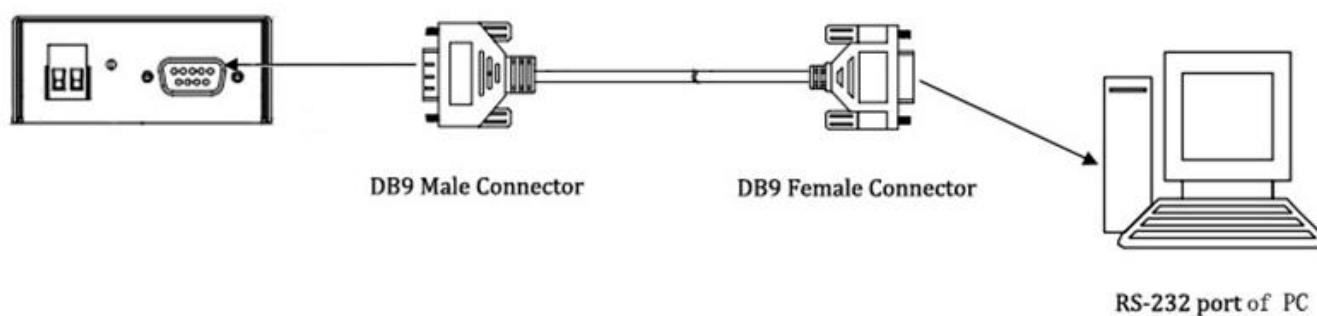
## 2.5 Connect the External Antenna (SMA Type)

Connect this to an external antenna with SMA male connector. Make sure the antenna is for the correct frequency as your GSM operator with impedance of 50ohm, and also connector is secured tightly.

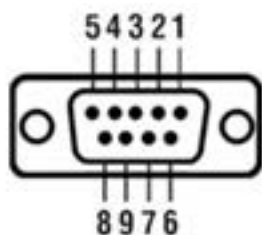


## 2.6 Connect the Gateway to External Device

User can use the serial cable to connect the gateway's DB9 female connector to external controller / computer.



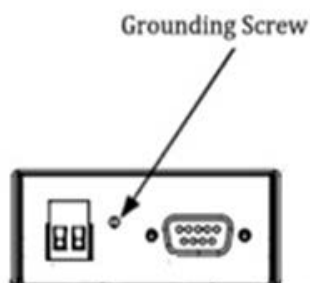
### PIN assignment for gateway's DB9 female connector



DB9 Female Connector

PIN	RS232	RS485 (2-wire)
1		Data+ (A)
2	RXD	
3	TXD	
4		
5	GND	
6		Data- (B)
7	RTS	
8	CTS	
9		

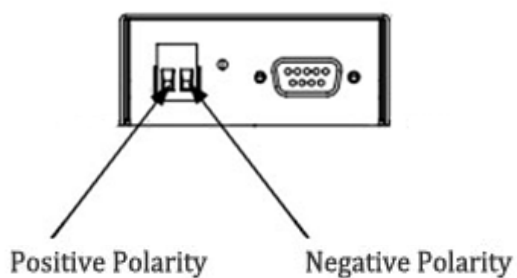
## 2.7 Grounding the Gateway



Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

**Note:** This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

## 2.8 Power Supply



The power supply range is 9 to 36VDC.

**Note:** Please take care about the polarity, and do not make reverse connection.

## Chapter 3. Operate the Gateway

### 3.1 Working Mode Overview

There are two working modes available in the gateway, please read carefully operate the DTU Configurator software:

Mode	Description
Config Mode	When DIP switches to <b>Config Mode</b> , user could use follow functions: 1. Configure gateway via <b>DTU Configurator</b> ; 2. Upgrade firmware.  <b>Serial port parameters is fixed as 115200, 8, None, 1</b>
Normal Mode	When DIP switches to <b>Normal Mode</b> , user could use follow functions: 1. Automatic GPRS/UMTS connection (no AT commands required); 2. Auto-reboot.  <b>Serial port default parameters: 115200, 8, None, 1</b>

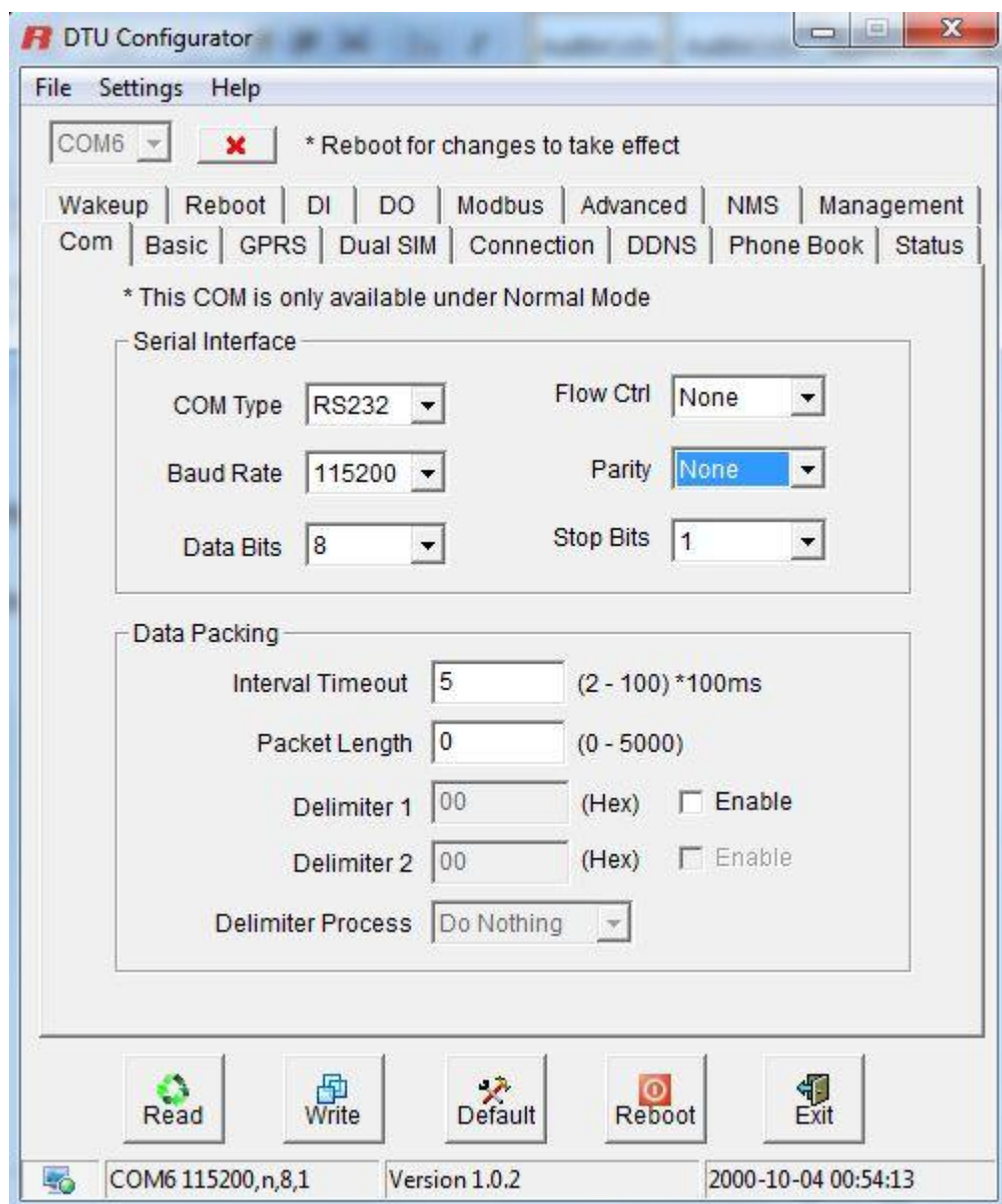
### 3.2 DTU Configurator Overview

DTU Configurator is a PC-based configuration software tool for managing and configuring Robustel M1000 Pro V2 gateways. With a full graphics mode and Windows-based environment, even first time users will find it easy to learn how to use this new software tool.

DTU Configurator not only makes configuration easier, but also makes it convenient to carry out “mass deployment” and “pre-configuration”. The most important benefits of using the “DTU Configurator” utility are:

1. Green software, no need installation;
2. Full graphics mode, easy to learn how to configure the M1000 Pro V2 gateways;
3. The configuration profile can be easily stored, and then replicated to other gateways;
4. Easy to upgrade gateway firmware.

**Note:** DTU Configurator can be used with Windows 2000/XP/Vista/7 32/64-bit operation systems.



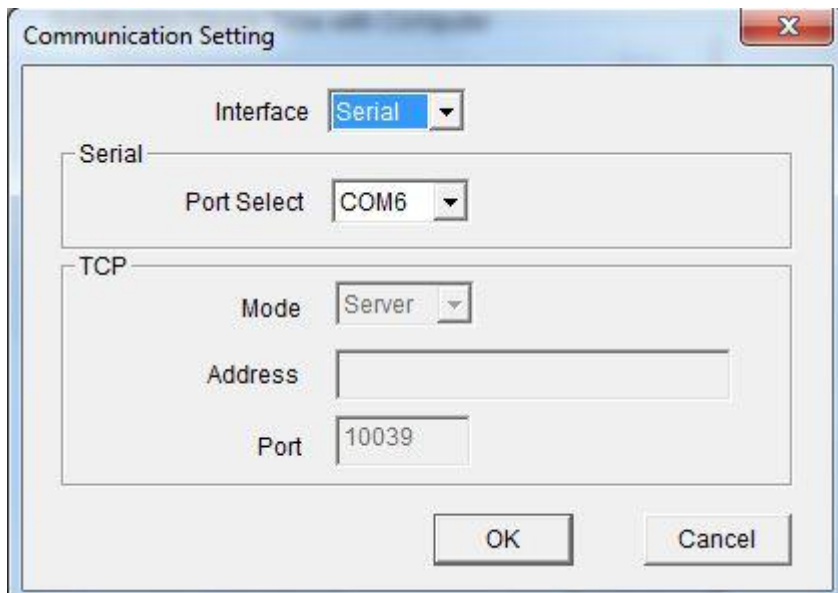
### 3.2.1 Management via RS-232 port

1. Switch the gateway to "Config Mode", connect the RS-232 port of the gateway to a host PC, and then power on the gateway.
2. Double click "DTU Configurator.exe" to start the software.






3. Click on the operation area, you can see the popup window as below:

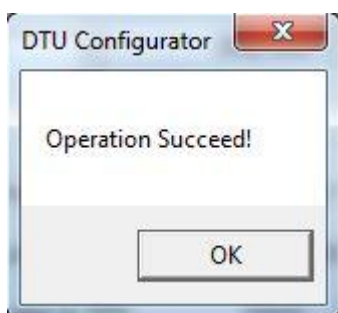


4. Select "Serial" and the correct COM port which is connecting to the gateway in the drop down boxes. Then click "OK".

**Note:** Serial is the default management mode of DTU configurator.

5. Select the correct COM port, then click  button.

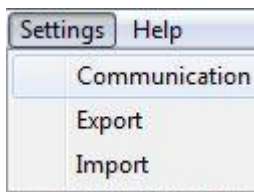
After that you can see the popup windows "Operation Succeed".

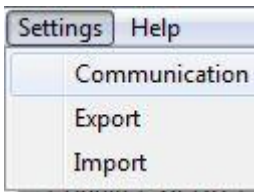


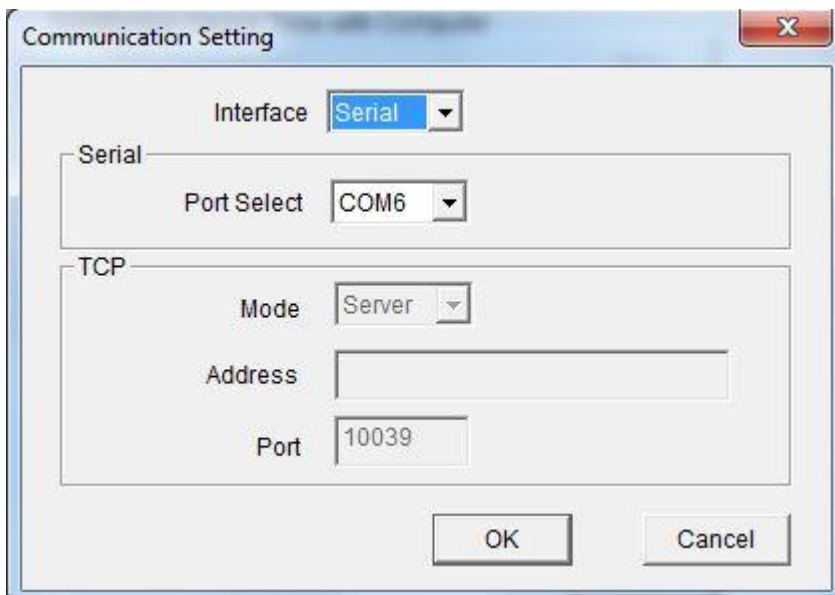
**Note:** The RS-232 connector uses the standard PINOUT. A direct male DB9 to female DB9 cable can be used to connect to a PC's serial port. If you use a USB-to-serial product to configure the gateway may cause unexpected errors when configuring the gateway.


### 3.2.2 Management via TCP connection

1. Double click “DTU Configurator.exe” to start the software.



2. Click  on the operation area, you can see the popup window as below:



3. Select “TCP” and the correct mode in the drop down boxes, and enter the local TCP port. If you choose client mode, you need to enter the remote gateway’s IP address. Then click “OK”.
4. Click  button.
  - a) If you choose TCP client mode, the configurator will establish a TCP connection to the remote gateway which works as TCP server.
  - b) If you choose TCP server mode, the configurator will be in listening status. Then you need to send an SMS to the remote gateway to trigger it to establish a TCP connection with configurator. The form of SMS is “0009, configurator’s IP address, configurator’s TCP port”.

**Note:**












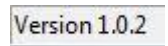
- i. The NMS function of gateway must have been enabled. Please refer to **3.2.17 NMS**.
- ii. The cell phone’s number must be included in gateway’s phonebook.

5. After that you can see the popup windows "Operation Succeed".



### 3.2.3 Operation Area Introduction

Menu	Icon	Description
File->Exit		Exit the DTU Configurator.
settings->Communication		Set the communication ways of configurator: Serial or TCP.
Settings->Export		Export the gateway's current configuration file to your local PC.
Settings->Import		Import the gateway's configuration file from local PC to the gateway.
Help->About		Show some notices about this configurator.
Help->About		Manufacturer's information and Gateway Configurator version.
Port No.		Select the local RS-232 port to communicate with the gateway.

Connect		Connect the DTU Configurator to the gateway, which will use the PC's local RS-232 port.
Disconnect		Disconnect the DTU Configurator to the gateway and release the PC's RS-232 port.
Read		Read gateway's current settings.
Write		Save changes into gateway. <b>Note:</b> Some parameters changes need to reboot to take effect.
Default		Set gateway to default factory settings.
Reboot		Reboot the gateway. After rebooting, user should disconnect and re-connect to the RS-232 port again.
Exit		Exit the DTU Configurator.
Disconnecting		Gateway is not communicating with DTU Configurator.
Connecting		Gateway is communicating with DTU Configurator.
Serial Management Settings		Show the current RS-232 management communication parameter.
TCP Management Settings		Show the current TCP management communication parameter.
Versions		Show the gateway's current firmware and hardware version.

### Important Notice

You must save your parameter changes by clicking “Write” button and then reboot your M1000 by clicking “Reboot” button to take effect for the parameter changes.

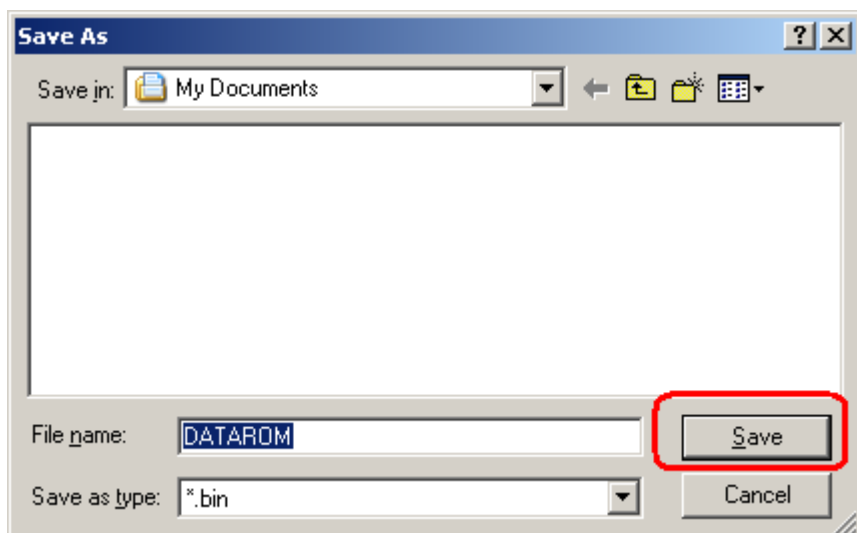
## 3.2.4 Export and Import Profiles

Users could export gateway settings from one gateway, and then import the same settings to other gateways, which makes it convenient to carry out “mass deployment” and “pre-configuration”.

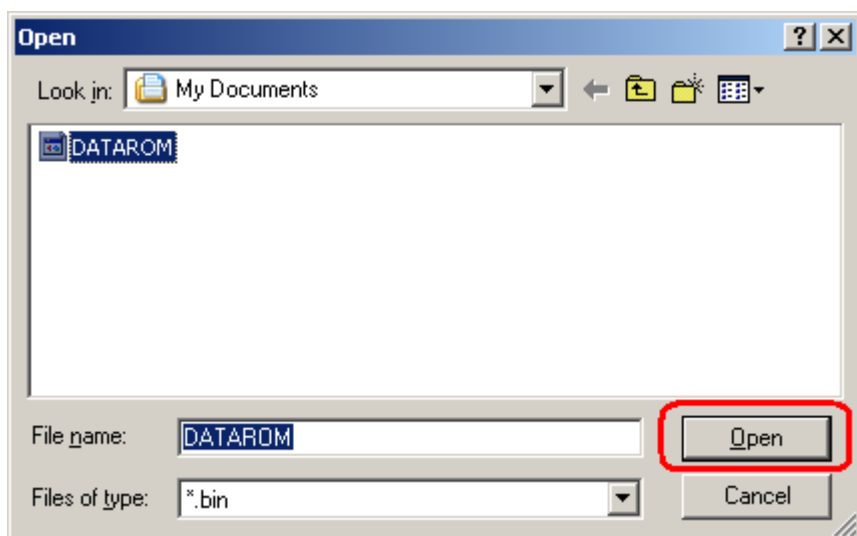
1. Select **Export** from the **Settings** menu. Then select a folder and enter the file name for the profile. Click on **Save**, then it will popup “**Export Succeed**” windows.







2. Select **Import** from the **Settings** menu. Then select a profile. Click on **Open**.



3. Click "**Write**" button then it will popup "**Import Succeed**" windows.

### 3.2.5 COM

This tab allows user to set the parameters of serial com port:

Basic		
Item	Description	Default
COM Type	Select from "RS232" and "RS485".	RS232

Baud Rate	Select from "1200", "2400", "4800", "9600", "19200", "38400", "57600" and "115200".	115200
Data Bits	Select from "7" and "8".	8
Flow Ctrl	Select from "None" and "Hardware".	None
Parity	Select from "None", "Odd", "Even", "Mark" and "Space".	None
Stop Bits	Select from "1" and "2".	1
Interval Timeout	This value allows gateway to packet the received data as a TCP/UDP packet and sends it out even the size of them hasn't reached the limit of <i>Packet Length</i> .	5
Packet Length	The limits size of the received data that gateway will packet as a TCP/UDP packet. <b>Note:</b> 0 is the same as the default value of TCP MSS, 1460.	0
Delimiter	The delimiter indicate gateway to packet the received data as a TCP/UDP packet and sends it out even the size of them hasn't reached the limit of <i>Packet Length</i> .	00
Delimiter Process	Select from "Do Nothing" and "Strip Delimiter".	Do Nothing

Wakeup | Reboot | DI | DO | Modbus | Advanced | NMS | Management  
Com | Basic | GPRS | Dual SIM | Connection | DDNS | Phone Book | Status

\* This COM is only available under Normal Mode

Serial Interface

COM Type: RS232 Flow Ctrl: None

Baud Rate: 115200 Parity: None

Data Bits: 8 Stop Bits: 1

Data Packing

Interval Timeout: 5 (2 - 100) \* 100ms

Packet Length: 0 (0 - 5000)

Delimiter 1: 00 (Hex) ☐ Enable

Delimiter 2: 00 (Hex) ☐ Enable

Delimiter Process: Do Nothing

### 3.2.6 Basic

This tab allows user to set follow items:

#### Basic

Item	Description	Default
Device Name	Write down the description name of the gateway, such as write down the gateway installation site name in order to identify each gateway.	DTU
SMS Control Password	Password for SMS control, including remote configuration and remote reading gateway status. The password can be left as null, maximum 20 ASCII characters.	null
SMS Ctrl Phone Group	Set the Phone group which is permitted to SMS control this gateway	1
SIM Card PIN Setup	Select from "Disable PIN Lock" and "Enable PIN Lock". After enable PIN lock, user could input your SIM's PIN and store the current PIN in its memory, and then enter the PIN automatically each time the system boots up. <b>Note:</b> Please ask your local GSM ISP to see whether your SIM card requiring PIN or not. If user wants to change the SIM PIN, please tick the "Change PIN Code" checkbox to enable it, and then input the new PIN at "Input New PIN Code".	Disable

Wakeup | Reboot | DI | DO | Modbus | Advanced | NMS | Management  
Com | Basic | GPRS | Dual SIM | Connection | DDNS | Phone Book | Status

Device Name

SMS Control Password

SMS Ctrl Phone Group

SIM 1

Enable PIN Lock ☐
PIN Code

Change PIN Code ☐
New PIN Code

SIM 2

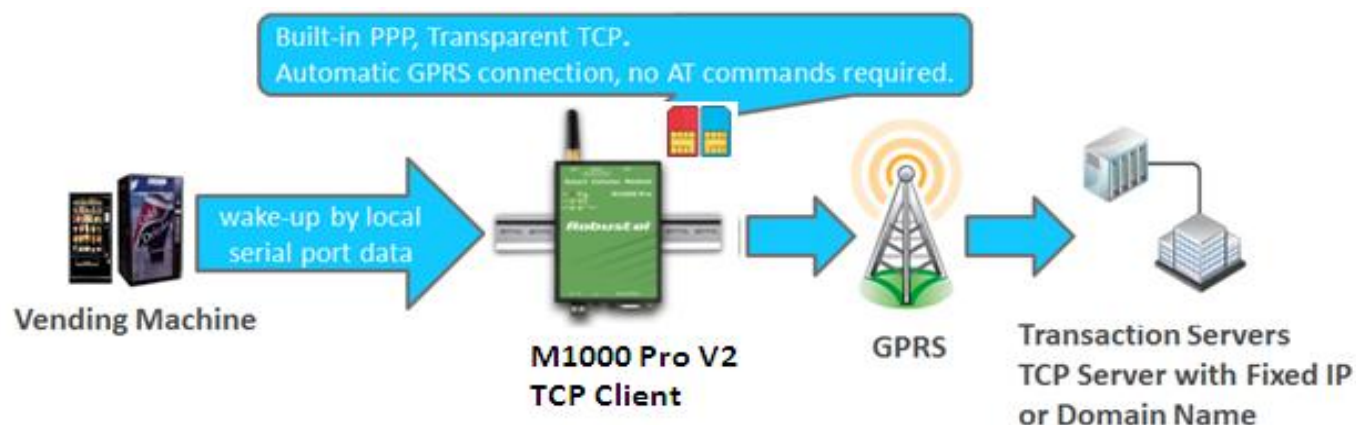
Enable PIN Lock ☐
PIN Code

Change PIN Code ☐
New PIN Code

### 3.2.7 GPRS

The major difference between M1000 Pro V2 serial to GPRS/UMTS gateway and traditional modem such as M1000/M1000 Lite is that M1000 Pro V2 built-in PPP and TCP/IP protocols, supports automatic GPRS/UMTS connection, no AT commands required, which can enable transparent TCP/UDP transmission.

Traditional GPRS gateway can only dialup to internet via external PPP enabled host device such as PC, PLC with built-in PPP protocol.



This tab allows user to set GPRS/UMTS and related items for automatic GPRS/UMTS connection:

GPRS		
Item	Description	Default
APN	Access Point Name for cellular dial-up connection, provided by local ISP.	Null
Auth Type	Selected from "None", "Auto", "PAP" and "CHAP" as the local ISP required.	Auto
User Name	User Name for cellular dial-up connection, provided by local ISP.	Null
Password	Password for cellular dial-up connection, provided by local ISP.	Null
DNS	Selected from "Use Peer DNS" and "Manual". Use Peer DNS: to automatically have DNS server assigned from local ISP. Manual: input DNS server's IP address manually in DNS 1 and DNS 2 field.	Use Peer DNS
DNS 1	Input DNS server's IP address after enable DNS->Manual.	Disable
DNS 2	Input secondary DNS server's IP address after enable DNS->Manual.	Disable

Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status

SIM 1

APN 
Auth Type

User Name 
Password

DNS

DNS 1 
DNS 2

SIM 2

APN 
Auth Type

User Name 
Password

DNS

DNS 1 
DNS 2

### 3.2.8 Dual SIM

This tab allows user to set the SIM cards' priorities, backup policies and other related parameters.

Dual SIM		
Item	Description	Default
Preferred SIM	Set the preferred SIM card from SIM 1 or SIM 2.	SIM 1
SIM Revert Back	<p>Set revert back policies when the gateway work with the backup SIM card.</p> <p>Auto Failover: Gateway will revert back to preferred SIM card when dial up failed or according to the failover policy you select.</p> <p>Try Preferred: Gateway will try to revert back to preferred SIM card when the GPRS/UMTS connectivity in idle state.</p> <p><b>Note:</b> the idle state of GPRS/ UMTS connectivity is depend on the inactivity time you set in Connection -&gt; Connection Control -&gt; Inactivity Time.</p>	Auto Failover
Failover Policies	<p>Set the failover policies to switch to another SIM card.</p> <p>Ping timeout continuously: If gateway ping the preset address timeout continuously for Max Retries time, it will switch to the other SIM card.</p> <p><i>Note: User can preset the address and the Max Retries time in Connection -&gt; Ping Control (ICMP).</i></p> <p>Monthly data traffic limitation: If the SIM card that the gateway worked with currently has reached the data traffic limitation you preset, it will switch to the other SIM card.</p> <p>Switch to backup SIM when preferred SIM is roaming: Gateway will Switch to backup SIM card when preferred SIM card is roaming.</p>	null
Home Location Area Identifier	The identifier for gateway to check if it is in home location area or in roaming area, and decide if it need to switch back to preferred SIM card.	null
Data Traffic Setting	<p>SIM limitation: Set the monthly data traffic limitation.</p> <p>Already Use: Current data traffic amount of this month.</p>	0

Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status

**Dual SIM**

Preferred SIM SIM 1 SIM Revert Back Auto Failover

**Failover Policies**

☐ Ping timeout continuously

☐ Monthly data traffic limitation

☐ Switch to backup SIM when preferred SIM is roaming

**Roaming Setting**

Home Location Area Identifier

**Data Traffic Setting**

SIM1 Limitation  Bytes

Already Use  Bytes Clear

SIM2 Limitation  Bytes

Already Use  Bytes Clear

### 3.2.9 Connection

This tab allows user to set the TCP/UDP connections and other related parameters.

Connection		
Item	Description	Default
Mode @ Socket Application	<p>Selected from "TCP Client", "TCP Server" and "UDP".</p> <p>TCP Client: Gateway works as TCP client, initiate TCP connection to TCP server, the server address supports both IP and domain name.</p> <p>TCP Server: Gateway works as TCP server, listening for connection request from TCP client.</p> <p>UDP: Gateway works as UDP client.</p>	TCP Server
Address @ Socket Application	<p>When gateway works as TCP client, user should input peer TCP server's IP or domain in this item.</p> <p>When gateway works as TCP server, this item is unavailable.</p> <p>When gateway works as UDP client, user should input peer UDP server's IP or domain in this item.</p>	null
Port	<p>When gateway works as TCP client, user should input peer TCP server's port in this item.</p> <p>When gateway works as TCP server, user should input TCP server's listening port in this item.</p> <p>When gateway works as UDP client, user should input peer UDP server's port in this item.</p>	9999
Mode @	Select from "Always Online" and "Connect On Demand".	Connect

Connection Control	Always Online: Gateway will automatically a GPRS/UMTS connection after power on and each restarts, this will remain and will be re-established after an interruption. Connect On Demand: After selection this option, user could configure wakeup at preset time, wakeup by Call, wakeup by SMS, wakeup by local serial port data at Wakeup Tab.	On Demand
Inactivity Time	User could configure this field after setting gateway under Connect On Demand mode, input from 10 to 1200 seconds. This field specifies the idle time setting for GPRS/UMTS auto-disconnection and trying to revert back to preferred SIM card.	10-1200
Max Retries @ Connection Control	The maximum retries times for automatically re-connect when gateway fails to dial up, input from 1 to 60. After maximum retries, gateway will reboot the wireless module. If gateway still cannot dial up successfully, it will try to switch to the other SIM card. Then gateway will re-connect with the other SIM card with maximum retries. When connecting successful, the Max Retries counter will be set to 0.	5
Connection Interval	Gateway will automatically re-connect with this interval when it fails communicating to peer via TCP or UDP, input from 10 to 1200 seconds.	60
Enable Online Notification	Click to enable Online SMS Notification function, which will send SMS to the phone numbers included in the <i>Phone Group</i> in this tab. Online SMS Notification includes follow information: Name: Reg: RSSI: Operator: Local IP: Time: <b>Note:</b> Local IP is the gateway's IP address assigned by ISP when dial-up to cellular network successful.	Disable
Phone Group	Set the phone group which the online SMS notification sent to.	1
Shut Down Module When Idle	Enable to set the gateway to shut down module when connectivity is in idle state. This function only can be configured under <i>Connect On Demand</i> mode.	Disable
Address @ Ping Control (ICMP)	Gateway will ping this address to check that if the current connectivity is active.	null
Interval	Set the ping interval time.	120
Max Retries @ Ping Control (ICMP)	If gateway ping the preset address timeout continuously for Max Retries time, it will try to re-connect to GPRS/UMTS network, or it will switch to the other SIM card if you enable the <i>Ping timeout continuously</i> in <i>Failover Policies</i> . 0 stands for gateway only try to keep to ping the address continuously and will do nothing else even timeout every time.	0



Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status

Socket Application

Mode

TCP Server

Address

Port

9999

Connection Control

Mode

Connect On Demand

Inactivity Time

120

(5 - 1200)s

Max Retries

5

(1 - 60)

Connect Interval

60

(10 - 1200)

Enable Online Notification

☐

Phone Group

1

Shut Down Module When Idle

☐

Ping Control (ICMP)

Address

Interval

120

(1-1800)s

Max Retries

5

(0-10)

### 3.2.10 DDNS

This tab allows user to set the DDNS server and other related parameters.

DDNS		
Item	Description	Default
Server	Selected from <i>None</i> , <i>dyndns</i> , <i>3322</i> and <i>No-IP</i> . <i>None</i> : Disable DDNS function. <i>dyndns</i> , <i>3322</i> and <i>No-IP</i> : Corresponding to three DDNS service providers.	None
Host	Enter the Host name the DDNS server provided.	null
User Name	Enter the user name the DDNS server provided.	null
Password	Enter password the DDNS server provided.	null
Last Response	Show the last response from the DDNS server.	null



Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status

DDNS

Server
None
Host
User Name
Password
Last Response
good

### 3.2.11 Phone Book

This tab allows user to set the phone numbers and which phone group they are belonged to.

Phone Book		
Item	Description	Default
Phone NO.	Input the telephone number.	Null
Phone Group	Select different phone numbers to include them in the same phone group.	Null

**Note:** The **Phone NO.** must be written in international format, starting with "+" followed by the country code.

Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status

Note: The Phone No. must be written in international format, starting with "+" followed by the country code.

Phone No.	Phone Group									
	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 3.2.12 Wakeup

M1000 Pro V2 supports various dial-up policies, for example serial data wakeup, wakeup on caller ID, wakeup on SMS and wakeup on preset time of a day.

In this page, user can set up different wakeup policies.

Wakeup		
Item	Description	Default
Time	Tick the <i>Time</i> checkbox to allow gateway automatic connects to GPRS/UMTS with preset time schedule every day, support maximum 3 time schedule/day (e.g. 07:00, 11:00 and 23:30 every day).	Disable
Periodical	Tick the <i>Periodically Connect Interval</i> checkbox to allow gateway automatic connects to GPRS/UMTS with preset interval, select from 1 to 1800 minutes. The interval is defined as time interval between two GPRS/UMTS connections.	Disable
Call	Tick the <i>Call</i> checkbox to allow gateway automatic connects to GPRS/UMTS with incoming call from specified <i>Caller ID</i> (phone number).	Disable
Phone Group @ Call	Set the Phone Group which was allowed to wake up the gateway by call.	1
Enable SMS Reply @ Call	Tick the <i>Enable SMS Reply</i> checkbox to allow gateway send reply short message after automatic connects to GPRS/UMTS by Call Wakeup from specified <i>Caller ID</i> (e.g. GPRS on ok!). <b>Note:</b> Only support text format SMS.	Disable
SMS	Tick the <i>SMS</i> checkbox to allow gateway automatic connects to GPRS/UMTS with incoming specified short message from specified <i>Caller ID</i> (phone number). Specified short message is set at <i>Password</i> item. (e.g. GPRS on)	Disable
Phone Group @ SMS	Set the Phone Group which was allowed to wake up the gateway by SMS.	1
Password	The specified short message which was used to wake up the gateway	null
Enable SMS Reply@ SMS	Tick the <i>Enable SMS Reply</i> checkbox to allow gateway send reply short message after automatic connects to GPRS/UMTS by SMS Wakeup from specified <i>Caller ID</i> (e.g. GPRS on ok!). <b>Note:</b> Only support text format SMS.	Disable
Serial Data Wakeup	Tick the <i>Serial Data Wakeup</i> checkbox to allow gateway automatic connects to GPRS/UMTS from idle mode when there is data come out from serial port.	enable
Output (0x) to COM port after online	After input the value in the field, gateway will output a command with hex format to gateway serial port when it has been wakeup from idle mode. Maximum 30 bytes. <b>Note:</b> supports all wakeup modes.	Disable
<b>Note:</b> 1. Time format for Time reboot is 24-hours. 2. The phone numbers for <b>Call</b> and <b>SMS</b> function can be set in Phone Book tab. 3. The <b>Caller ID</b> must be written in international format, starting with “+” followed by the country code.		

Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status
Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management

Timing

☐ Enable    Time 1  (hh:mm)  
☐ Enable    Time 2  (hh:mm)  
☐ Enable    Time 3  (hh:mm)

Periodical

☐ Enable    Interval  (1 - 1800)min

Call

☐ Enable    Phone Group

☐ Enable SMS Reply    SMS

SMS

☐ Enable    Phone Group

☐ Enable SMS Reply    Password

SMS

Serial Data

☒ Enable

Output (Hex)  to COM After Online

### 3.2.13 Reboot

Since cellular network is not as stable as fixed line, M1000 Pro V2 supports various auto reboot function to keep gateway working 24x7 without hang up.

Reboot		
<b>Note: This function is available under both "Config Mode" and "Normal Mode".</b>		
Item	Description	Default
Time	Tick the <i>Time</i> checkbox to allow gateway auto reboot with preset time schedule every day, support maximum 3 time schedule/day (e.g. 07:00, 11:00 and 23:30 every day).	Disable
Call	Tick the <i>Call</i> checkbox to allow gateway auto reboot with incoming call from specified <i>Caller ID</i> (phone number). The <i>Caller ID</i> (phone number) should be specified in <i>Phone Book</i> tab by inputting the phone number and tick <i>Call Reboot</i> checkbox.	Disable
Phone Group @ Call	Set the Phone Group which was allowed to reboot the gateway by call.	1
Enable SMS Reply	Tick the <i>Enable SMS Reply</i> checkbox to allow gateway send reply short message after auto reboot by Call Reboot from specified <i>Caller ID</i> (e.g. Reboot ok!). <b>Note: Only support text format SMS.</b>	Disable

SMS	Tick the <i>SMS</i> checkbox to allow gateway auto reboot with incoming specified short message from specified <i>Caller ID</i> (phone number). Specified short message is set at <i>Password</i> item. (e.g. reboot) The <i>Caller ID</i> (phone number) should be specified in <i>Phone Book</i> tab by inputting the phone number and tick <i>SMS Reboot</i> checkbox.	Disable
Phone Group @ SMS	Set the Phone Group which was allowed to reboot the gateway by SMS.	1
Password	The specified short message which was used to reboot the gateway	null
Enable SMS Reply	Tick the <i>Enable SMS Reply</i> checkbox to allow gateway send reply short message after auto reboot by SMS Reboot from specified <i>Caller ID</i> (e.g. Reboot ok!). <b>Note:</b> Only support text format SMS.	Disable

**Note:**

1. Time format for Time reboot is 24-hours.
2. The phone numbers for **Call** and **SMS** function can be set in Phone Book tab.
3. The **Caller ID** must be written in international format, starting with "+" followed by the country code.

### 3.2.14 Modbus

This tab allows user to set the related parameters of Modbus RTU to Modbus TCP gateway.

Modbus		
Item	Description	Default
Enable Modbus Gateway	Tick this checkbox to enable Modbus RTU to Modbus TCP.	Disable

Mode	<p>Selected from Slave and Master.</p> <p>Slave: Selected when gateway connect to Modbus slave device with serial COM port.</p> <p>Master: Selected when gateway connect to Modbus Master device with serial COM port.</p> <p><b>Note:</b> Generally, If you select Slave mode, gateway need to work under TCP server mode, and If you select Master mode, gateway need to work under TCP client mode.</p>	Slave
Slave ID Range of Connection 1 @ Master Mode	<p>Available when enable Modbus Gateway and select Master mode.</p> <p>This item is corresponding to the default TCP connection which can be set in <i>Connection</i> tab.</p> <p>Enter the remote Modbus slave IDs here.</p>	0-0
Slave ID Range of Connection 2 @ Master Mode	<p>Available when enable Modbus Gateway, select Master mode and enable Connection 2.</p> <p>This item is corresponding to the Connection 2 which can be set in this tab.</p> <p>Enter the remote Modbus slave IDs here.</p>	0-0
Slave ID Range of Connection 3 @ Master Mode	<p>Available when enable Modbus Gateway, select Master mode and enable Connection 3.</p> <p>This item is corresponding to the Connection 3 which can be set in this tab.</p> <p>Enter the remote Modbus slave IDs here.</p>	0-0
Connection 2	<p>Tick this checkbox to enable the second TCP connection to the remote TCP server. This TCP connection is usually used to connect to the second Modbus slave gateway.</p> <p>User need to enter the TCP server's IP and port here.</p>	Disable
Connection 3	<p>Tick this checkbox to enable the third TCP connection to the remote TCP server. This TCP connection is usually used to connect to the third Modbus slave gateway.</p> <p>User need to enter the TCP server's IP and port here.</p>	Disable
<p><b>Note:</b></p> <p>1. Connection 2 and Connection 3 only can work under TCP client mode.</p>		

Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status
Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management

**Basic Setting**

Enable Modbus Gateway ☐ Mode Master

**Master Mode**

Slave ID Range of Connection 1 0 - 0 (1 - 247)

Slave ID Range of Connection 2 0 - 0 (1 - 247)

Slave ID Range of Connection 3 0 - 0 (1 - 247)

**Connection 2**

Enable ☐ Mode TCP Client

Address  Port 502

**Connection 3**

Enable ☐ Mode TCP Client

Address  Port 502

### 3.2.15 Advanced

Advanced settings for GPRS/UMTS and IP communications.

Advanced		
Item	Description	Default
Custom Login	<p>Tick to enable.</p> <p>Some TCP servers required Login Request Packet with follow flow:            A TCP connection begins with the client opening a TCP/IP socket to the server and sending a Login Request Packet. If the login request is valid, the server responds with a Login Acknowledge Packet and begins sending Sequenced Data Packets. The connection continues until the TCP/IP socket is broken.            Login Acknowledge Packet is optional.</p>	Disable
Max Retries	<p>Login Request Packet</p> <p>The maximum retries times for sending Login Request Packet to the server with preset time interval, selecting from 0 to 60.</p> <p>After maximum retries, gateway will not retry again, and image login successfully.</p>	0
Interval	Time interval between two retries, selecting from 5 to 120 seconds.	60 seconds
REQ Packet	Login Request Packet, written in Hex format, maximum 64 bytes.	Null
ACK Packet	<p>Login Acknowledge Packet, written in Hex format, maximum 32 bytes.</p> <p>Login Acknowledge Packet is optional.</p>	Null

Custom Keep Alive	When using GPRS/UMTS with a session running most ISPs will monitor the traffic flow, if there is none for a predetermined period of time then it will shut the connection down at either the DHCP server or the APN, this is performed so that system resources are not taken up unnecessarily. To stop this happening you will need to send periodic Keep Alive bytes to <i>keep the modem always online</i> .	Disable
Interval	Time interval between two Keep Alive packets, selecting from 5 to 1200 seconds.	40 seconds
REQ Packet	Keep Alive Request Packet, written in Hex format, maximum 64 bytes.	Null
ACK Packet	Keep Alive Acknowledge Packet, written in Hex format, maximum 32 bytes. Keep Alive Acknowledge Packet is optional.	Null
Custom Logout	Tick to enable. Some TCP servers required Logout Request Packet with follow flow: A TCP connection ends with the client sending a Logout Request Packet. If the logout request is valid, the server responds with a Logout Acknowledge Packet and ends the connection. Logout Acknowledge Packet is optional.	Disable
REQ Packet	Logout Request Packet, written in Hex format, maximum 64 bytes.	Null
ACK Packet	Logout Acknowledge Packet, written in Hex format, maximum 32 bytes. Logout Acknowledge Packet is optional.	Null

Com	Basic	GPRS	Dual SIM	Connection	DDNS	Phone Book	Status
Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management

Custom Login

☐ Enable
 Max Retries  (0 - 60) Interval (s)  (5 - 120)

REQ Packet (0x)

ACK Packet (0x)

Custom Keep Alive

☐ Enable Interval (s)  (5 - 1200)

REQ Packet (0x)

ACK Packet (0x)

Custom Logout

☐ Enable

REQ Packet (0x)

ACK Packet (0x)



### 3.2.16 NMS

This tab allows user to set the related parameters of TCP Network Management.

NMS		
Item	Description	Default
Enable	Tick this checkbox to enable NMS.	Disable
Mode	Non-configurable. Normally, gateway works under TCP server mode for NMS function, but it also can work under TCP client mode. Please refer to <b>3.2.2 Management via TCP connection</b> to get the detail information.	Disable
Address	Non-configurable.	Null
Port	Set the listening port of TCP server for NMS function.	30000

### 3.2.17 Management

This tab provides some system tools for user.

NMS		
Item	Description	Default
Synchronize Device Time with Computer	Synchronize gateway's RTC to PC's clock. The gateway's current RTC will be showed at bottom right side of the configurator.	Null
Output Debug info to Serial Port	Enable to output the gateway's debug info to serial port. Then you can use a hyper terminal to receive the debug info. This function is often used when we need to diagnose the problem of the gateway. <b>Note:</b> <i>This function will take effect immediately after you enable it.</i>	Disable
Switch to Another	Switch to another SIM card manually.	Null



SIM		
Update	<p>Update the FW of gateway via serial port or TCP connection. The update steps are as bellow:</p> <ol style="list-style-type: none"><li>1. Click "<i>load</i>" button and select the FW file in your computer;</li><li>2. Click "<i>Start</i>" button to get started, then you can see a process bar;</li><li>3. The updating will last for several minutes, then you will see a pop window to indicate the updating is successful.</li></ol>	Null

ComBasicGPBSDual SIMConnectionDDNSPhone BookStatusWakeUpRebootDIDOModbusAdvancedNMSManagement

Synchronize Device Time with Computer

Sync

Ouput Debug Info to Serial Port

Enable

Switch to Another SIM

Switch

Upgrade

Load

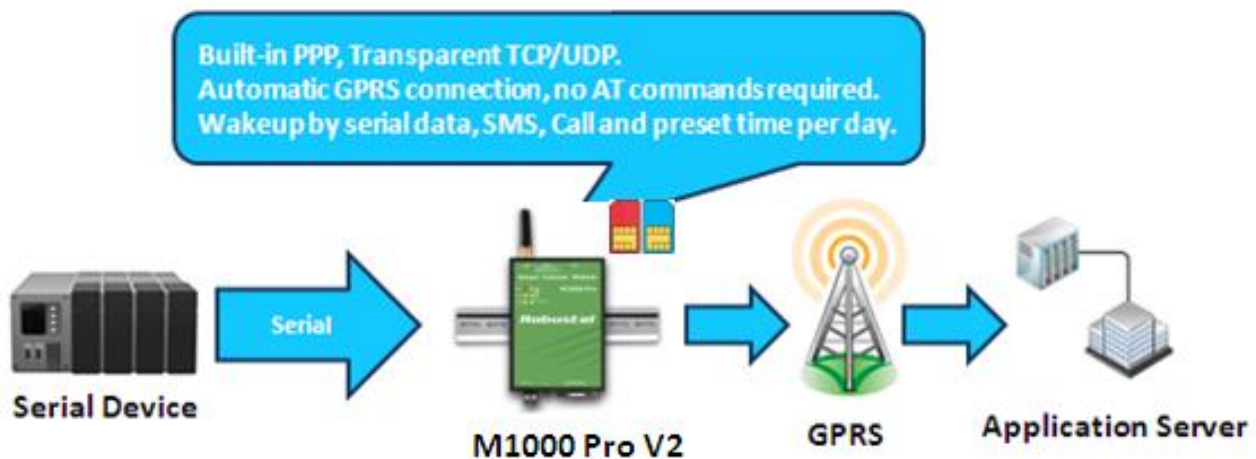
Start

## Chapter 4. Typical Applications

### 4.1 Overview

Cellular data transmission is an increasingly attractive mechanism for communication with remote, non-permanent or mobile devices. Being able to collect and distribute data virtually anywhere without requiring the limitation of working within specific fixed line networks is a powerful force for efficiency and reliability. However, the fact that cellular data is metered means that the frequency of transmission and amount of data sent in each exchange can have significant cost and performance impact.

In order to understand this impact, let us start with a fairly typical example, where there is a device in the field and an application on a server at a central site location that collects information from that device.



In general, the purpose of communication with the device will be for one of two reasons:

- **Monitoring** - Status monitoring data, such as the level or temperature of a storage tank, the velocity and pressure of a pipeline, the condition of a controller or the status of a register.
- **Transaction data** – Discrete event data, such as cash or credit transactions, PBX call records or mission-critical and safety related alarms.

Status monitoring data is often “polled.” The application sends out periodic queries and gets responses to those queries. The application can usually retry if it does not get an answer, and determine that a problem exists if it does not get a response after a certain amount of retries.

Discrete event data is usually “unsolicited.” The application does not expect to get information on any regular basis, and therefore the failure to hear from the device is the normal case (though some sort of “all is well” message may be sent at a longer interval).

Most applications will likely involve one or both of these methods and data is transmitted in TCP or UDP packets.

## 4.2 Typical Applications

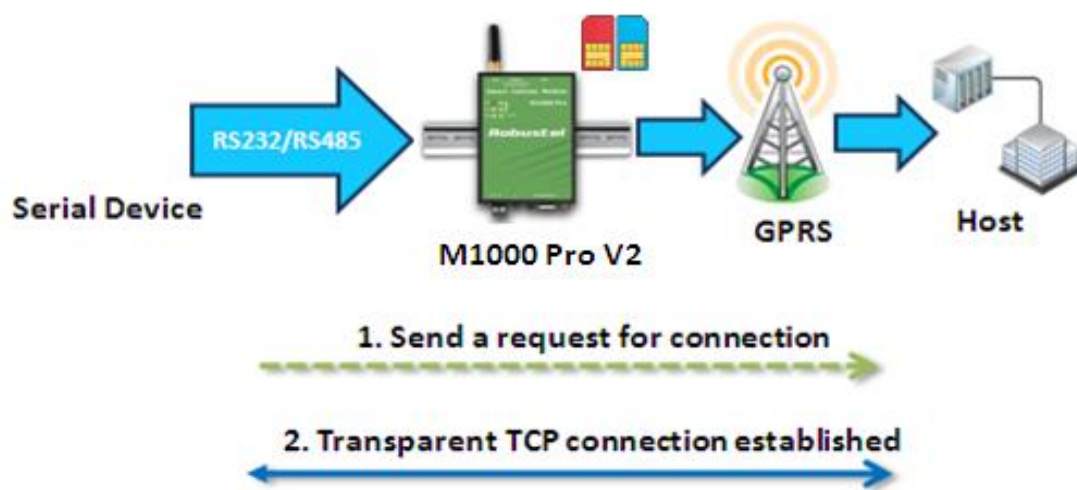
### 4.2.1 TCP Client Mode

In TCP Client mode, the gateway can actively establish a TCP connection to a pre-defined host computer when serial data arrives. After the data has been transferred, the gateway can automatically disconnect from the host computer by using the Inactivity time settings.

As illustrated in the figure below, data transmission proceeds as follows:

(1) The gateway, configured for TCP Client mode, requests a connection to the host.

(2) Once the connection is established, data can be transmitted in both directions between the host and the gateway bidirectional.



#### Types of TCP Client Connection:

1. Fixed Public IP (or dynamic public IP with domain name) for the host PC  
The gateway will only be able to connect to a host PC if the PC is using a fixed public IP address (or dynamic public IP with domain name), gateway can be any IP (either a private IP or public IP).
2. Connecting TCP client and TCP server within the same cellular service provider.  
In order to connect properly, the IP addresses of the two gateways must belong to the same sub network. To ensure that this is the case, use the same cellular ISP to connect the devices to the network. In addition, you will need to request that the cellular ISP provide you with two private fixed IP addresses (e.g., 192.168.1.1 and 192.168.1.2).

#### Configuration and Operation:

1. Turn the gateway to Config mode and connect it to your PC properly.
2. Open the Modenconfigurator.
3. Turn to *GPRS* tap. Set APN, Username and Password of SIM 1. If you need to use SIM 2, you also need to set



these parameters of SIM 2. Then click

Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	<b>GPRS</b>	Dual SIM	Connection	DDNS	Phone Book	Status

**SIM 1**

APN:  Auth Type:

User Name:  Password:

DNS:

DNS 1:  DNS 2:

**SIM 2**

APN:  Auth Type:

User Name:  Password:

DNS:

DNS 1:  DNS 2:

4. Turn to *Connection* tap. Select Socket Application Mode as *TCP Client*. Input remote TCP server's address and



port. Select Connection Control Mode as *Always Online* or *Connect On Demand* as your need. Then click

Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	GPRS	Dual SIM	<b>Connection</b>	DDNS	Phone Book	Status

**Socket Application**

Mode:

Address:

Port:

**Connection Control**

Mode:

Inactivity Time:  (10 - 1200)s

Max Retries:  (1 - 60)

Connect Interval:  (10 - 1200)s

Enable Online Notification: ☐ Phone Group:

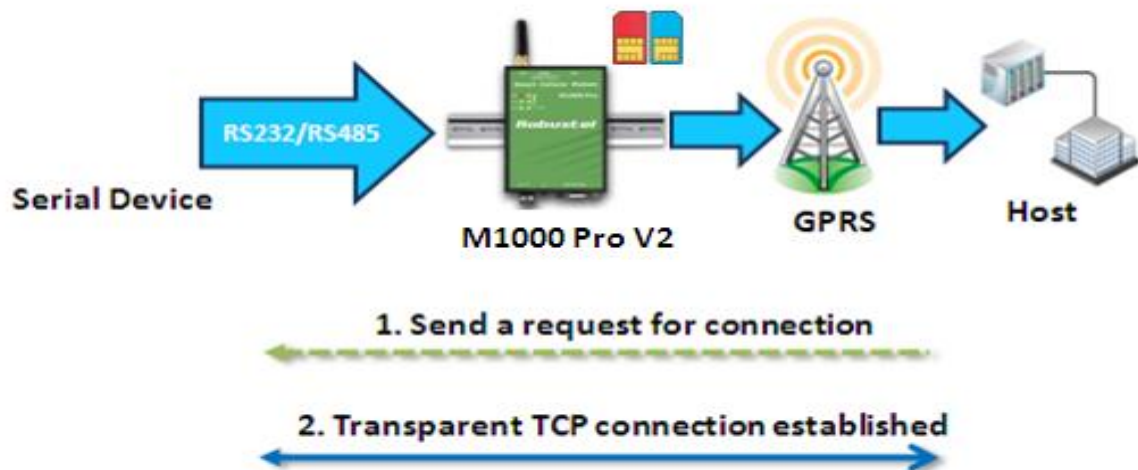
Shut Down Module When Idle: ☐

5. Turn the gateway back to Normal mode and reboot it.

## 4.2.2 TCP Server Mode

In TCP Server mode, the serial port on the gateway is assigned a port number. The host computer initiates contact with the gateway, establishes the connection, and receives data from the serial device.

As illustrated in the figure, data transmission proceeds as follows: The host requests a connection from the gateway, which is configured for TCP Server mode. Once the connection is established, data can be transmitted between the host and the gateway bidirectional.



### Types of TCP Server Connection:

1. Fixed Public IP for the gateway.  
If your cellular service provider offers a fixed public IP address after you connect to the cellular network, you can access the gateway from a host PC using either a private IP or public IP.
2. Dynamic public IP with domain name for the gateway.  
If your cellular service provider offers a dynamic public IP address after you connect to the cellular network, you can use the DDNS function to get a domain name from the domain name server for the gateway. Then you can access the gateway from a host PC using this domain name.
3. Connecting TCP client and TCP server within the same cellular service provider.  
In order to connect properly, the IP addresses of the two gateway devices must belong to the same sub network. To ensure that this is the case, use the same cellular ISP to connect the devices to the network. In addition, you will need to request that the cellular ISP provide you with two private fixed IP addresses (e.g., 192.168.1.1 and 192.168.1.2).

### Configuration and Operation:

1. Turn the gateway to Config mode and connect it to your PC properly.
2. Open the Modemconfigurator.
3. Turn to *GPRS* tap. Set APN, Username and Password of SIM 1. If you need to use SIM 2, you also need to set

these parameters of SIM 2. Then click



Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	<b>GPRS</b>	Dual SIM	Connection	DDNS	Phone Book	Status

SIM 1

APN 
Auth Type

User Name 
Password

DNS

DNS 1 
DNS 2

SIM 2

APN 
Auth Type

User Name 
Password

DNS

DNS 1 
DNS 2

4. Turn to *Connection* tap. Select Socket Application Mode as *TCP Server*. Input local listening port. Select

Connection Control Mode as *Always Online* or *Connect On Demand* as your need. Then click



Wakeup	Reboot	DI	DO	Modbus	Advanced	NMS	Management
Com	Basic	GPRS	Dual SIM	<b>Connection</b>	DDNS	Phone Book	Status

Socket Application

Mode

Address

Port

Connection Control

Mode

Inactivity Time  (10 - 1200)s

Max Retries  (1 - 60)

Connect Interval  (10 - 1200)s

Enable Online Notification ☐
Phone Group

Shut Down Module When Idle ☐

5. Turn the gateway back to Normal mode and reboot it.

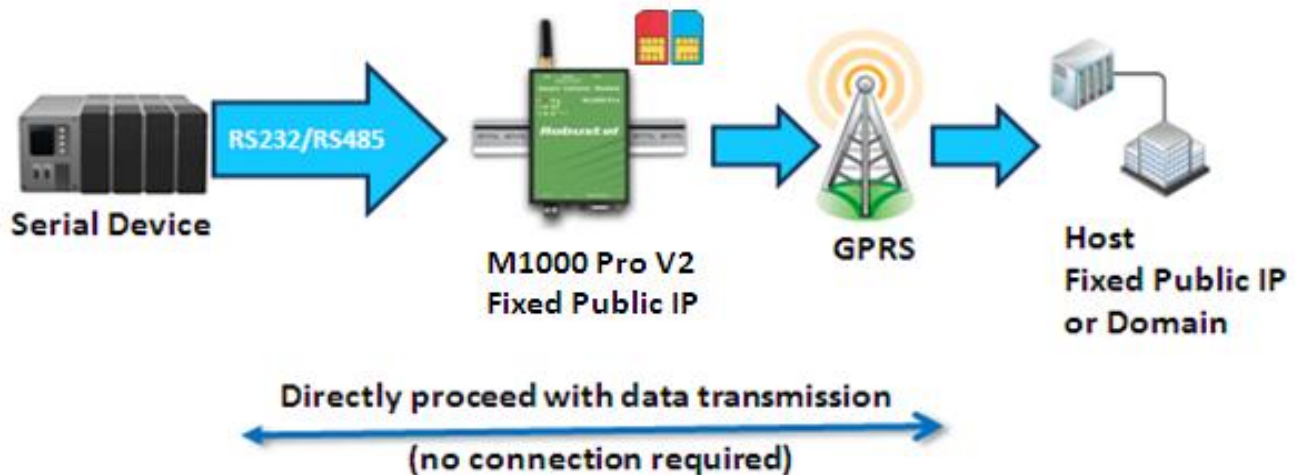
### 4.2.3 UDP Mode

The main difference between the TCP and UDP protocols is that TCP guarantees delivery of data by requiring the



recipient to send an acknowledgement to the sender. UDP does not require this type of verification, making it possible to offer faster delivery. UDP also allows you to unicast data to one IP, or multicast the data to a group of IP addresses.

These traits make UDP mode especially well suited for message display applications.



1. If your cellular ISP offers a fixed public IP address after you connect to the cellular network, you can access the gateway from a host PC that has a fixed public IP bidirectional.
2. If your cellular service provider offers a dynamic public IP address after you connect to the cellular network, you can use the DDNS function to get a domain name from the domain name server for the gateway. Then you can access the gateway from a host PC that has a fixed public IP bidirectional.
3. If gateway has no fixed public IP or domain name, then it can unicast data to one host unidirectional.

**Note:** M1000 Pro V2 supports unicast only.

## 4.2.4 Virtual COM Mode

One of the major conveniences of using Virtual COM mode is that it allows you to use Virtual COM software that was written for pure serial communication applications. The Virtual COM driver intercepts data sent to the host's COM port, packs it into a TCP/IP packet, and then redirects it through the host's Ethernet to the Internet. At the other end of the connection, the gateway accepts the IP frame from the cellular network, unpacks the TCP/IP packet, and then transparently sends the data through the serial port to the attached serial device.

We provide application notes to introduce how to work with 3<sup>rd</sup> parties' popular virtual com software, please contact us to get more information.

**Note:**

*Virtual COM software (COM port redirector) is a specialized software (often including device driver and user application) that includes the underlying network software necessary to access networked device servers that provide remote serial devices or modems.*

*The purpose of the redirector is to make the virtual COM port exhibit behavior that closely resembles that of a "real" COM port, i.e., a COM port driver for local serial port hardware. A virtual COM port itself is a relatively simple software mechanism that can be implemented by driver software similar to that of a conventional COM port driver.*

*The main challenges arise in two other areas: the network connection to the device server and the behavior of the device server. These issues are described in the Technology section below.*

## Chapter 5. Appendix

### 5.1 Factory Settings

Factory setting of the modem COM port under **Config Mode and Normal Mode** is:

**Data bits = 8**

**Parity = none**

**Stop bits = 1**

**Baud = 115200 bps**

**Flow control = none**

### 5.2 Troubleshooting

This section of the document describes possible problems encountered when using the Robustel M1000 Pro V2 and their solutions.

#### 5.2.1 The modem's LED does not light:

- Check if modem has connected to a 9 to 36VDC power supply properly.
- Check if the power connector is properly inserted.

#### 5.2.2 No connection with modem through serial link

- Check if the serial cable has been connected properly.
- Check if the serial cable has been made by following pin assignment given in table [PIN Assignment](#) for RS232 and RS485.
- Check if your program has proper setting. Factory setting of the modem under **Normal Mode** is listed at [5.1](#).
- Check if there is another program interfering with the communication program, such as conflict on communication port access.

#### 5.2.3 GPRS/UMTS connection cannot be established

- Check if the APN, User Name and Password have been input correctly.



- Check if the SIM card balance is enough or not.

## 5.3 Terms and Abbreviations

Abbreviations	Description
AC	Alternating Current
APN	Access Point Name of GPRS/UMTS Service Provider Network
CE	Conformité Européene (European Conformity)
CHAP	Challenge Handshake Authentication Protocol
CSD	Circuit Switched Data
CTS	Clear to Send
dB	Decibel
dBi	Decibel Relative to an Isotropic radiator
DC	Direct Current
DCD	Data Carrier Detect
DCE	Data Communication Equipment (typically modems)
DCS 1800	Digital Cellular System, also referred to as PCN
DDNS	Dynamic Domain Name Server
DNS	Domain Name Server
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi-frequency
DTR	Data Terminal Ready
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
ESD	Electrostatic Discharges
ETSI	European Telecommunications Standards Institute
GND	Ground
GPRS	General Package Radio Service
GSM	Global Standard for Mobile Communications
IMEI	International Mobile Equipment Identification
kbps	kbits per second
LED	Light Emitting Diode
MAX	Maximum
Min	Minimum
MO	Mobile Originated
MS	Mobile Station
MT	Mobile Terminated
PAP	Password Authentication Protocol
PC	Personal Computer
PCN	Personal Communications Network, also referred to as DCS 1800

PCS	Personal Communication System, also referred to as GSM 1900
PDU	Protocol Data Unit
PPP	Point-to-point Protocol
PIN	Personal Identity Number
PSU	Power Supply Unit
PUK	Personal Unblocking Key
R&TTE	Radio and Telecommunication Terminal Equipment
RF	Radio Frequency
RTC	Real Time Clock
RTS	Request to Send
Rx	Receive Direction
SIM	Subscriber Identification Module
SMA	Subminiature Version A RF Connector
SMS	Short Message Service
TCP/IP	Transmission Control Protocol / Internet Protocol
TE	Terminal Equipment, also referred to as DTE
Tx	Transmit Direction
UART	Universal Asynchronous Receiver-transmitter
UDP	User Datagram Protocol
USSD	Unstructured Supplementary Service Data
VSWR	Voltage Stationary Wave Ratio